

Clinicodemographic Profile and Socioeconomic Status of Patients with Chronic Dacryocystitis: A Hospital-Based Cross-Sectional Study

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ABSTRACT

Background: Chronic dacryocystitis is a common disorder of the lacrimal drainage system resulting from nasolacrimal duct obstruction, leading to persistent epiphora, recurrent infection, and ocular morbidity. Demographic, occupational, and socioeconomic factors may influence its occurrence and healthcare-seeking behavior. This study evaluated the demographic profile, occupational characteristics, and socioeconomic status of patients with chronic dacryocystitis attending a tertiary care hospital. **Materials and Methods:** A hospital-based cross-sectional observational study was conducted in the Department of Ophthalmology, Sewa Sadan Eye Hospital, Bhopal. A total of 200 clinically diagnosed patients with chronic dacryocystitis were enrolled after obtaining written informed consent. Demographic details, occupation, clinical history, and socioeconomic status were recorded using the Modified B.G. Prasad classification. All patients underwent comprehensive ophthalmic evaluation, including slit-lamp examination, regurgitation on pressure over the lacrimal sac (ROPLAS) test, and lacrimal sac syringing. Data were analyzed using SPSS version 26.0, with $p < 0.05$ considered statistically significant. **Results:** Of the 200 patients, the highest proportion belonged to the 51–60 years age group (27.0%), followed by 61–70 years (25.0%). Females accounted for 64.0% of cases, yielding a female-to-male ratio of approximately 1.8:1. Right eye involvement was observed in 54.0% of patients. Homemakers (27.5%) represented the largest occupational group, followed by private service employees (20.0%). Most patients belonged to Modified B.G. Prasad socioeconomic Class II (38.0%) and Class III (35.0%). A statistically significant association was found between occupation and socioeconomic status ($p < 0.001$). **Conclusion:** Chronic dacryocystitis predominantly affected middle-aged and elderly women, with most patients belonging to middle socioeconomic classes. Occupation was significantly associated with socioeconomic status. Early diagnosis, timely intervention, and improved public awareness may reduce disease-related morbidity and enhance patients' quality of life.

Keywords: Chronic dacryocystitis, Epiphora, Nasolacrimal duct obstruction, Modified B.G. Prasad classification, Socioeconomic status, Occupation.

INTRODUCTION

Chronic dacryocystitis is a common disorder of the lacrimal drainage system characterized by chronic inflammation and infection of the lacrimal sac secondary to obstruction of the nasolacrimal duct. It is an important cause of ocular morbidity in India and may present as either an acute or chronic condition depending on the duration and severity of inflammation. [1,2] Chronic dacryocystitis accounts for approximately 87.1% of

patients presenting with epiphora and is commonly associated with persistent watering of the eyes, mucopurulent discharge, recurrent conjunctivitis, and swelling over the lacrimal sac region, resulting in significant discomfort and reduced quality of life. [3,4] The lacrimal drainage system comprises the puncta, canaliculi, common canaliculus, lacrimal sac, and nasolacrimal duct, which drains tears into the inferior nasal meatus.[5] Obstruction anywhere along this

pathway causes tear stasis, facilitating microbial proliferation and chronic infection.[6] Acquired nasolacrimal duct obstruction may be primary, resulting from idiopathic inflammatory fibrosis, or secondary to infections, inflammatory disorders, trauma, neoplasms, allergies, or mechanical causes.[2A,6] If untreated, progressive fibrosis and persistent infection may lead to serious complications, including lacrimal abscess, lacrimal fistula, corneal ulceration, orbital cellulitis, cavernous sinus thrombosis, and postoperative endophthalmitis.[7-9]

The disease predominantly affects adults, particularly females over 40 years of age, with the highest incidence reported during the sixth and seventh decades of life.[11] Anatomical differences, hormonal influences, and exposure to environmental irritants such as smoke, dust, industrial fumes, and biomass fuel have been implicated as contributing factors.[10] Socioeconomic status also plays an important role in disease occurrence, influencing personal hygiene, health awareness, and healthcare-seeking behavior. Previous studies have demonstrated a higher incidence of chronic dacryocystitis among individuals from lower socioeconomic groups, where delayed presentation and limited access to ophthalmic care may contribute to disease progression.[11]

However, data regarding the clinicodemographic and socioeconomic profile of patients with chronic dacryocystitis attending urban tertiary care centres remain limited. Therefore, the present study was undertaken in the Department of Ophthalmology, Sewa Sadan Eye Hospital, Bhopal, to evaluate the clinicodemographic characteristics and socioeconomic status of patients with chronic dacryocystitis using the Modified B.G. Prasad socioeconomic classification, thereby providing epidemiological evidence for early diagnosis, timely intervention, and improved preventive strategies.

MATERIAL AND METHODS

This hospital-based, cross-sectional observational study was conducted in the Department of Ophthalmology, Sewa Sadan Eye Hospital, Bhopal, Madhya Pradesh, India. The study was carried out after obtaining approval from the Institutional Ethics Committee, and written informed consent was obtained from all participants prior to enrollment.

A total of 200 patients diagnosed with chronic dacryocystitis attending the Ophthalmology Outpatient Department during the study period were included in the study. Eligible patients were recruited consecutively until the required sample size was achieved.

Sample Size

A total of 200 consecutive patients fulfilling the eligibility criteria were included during the study period. Since this was a hospital-based observational cross-sectional study, all eligible patients presenting during the study period were enrolled.

Ethical Approval

The study was approved by the Institutional Ethics Committee of Sewa Sadan Eye Hospital, Bhopal and was conducted in accordance with the Declaration of Helsinki.

Inclusion Criteria

- Patients aged 18 years or older.
- Clinically diagnosed cases of chronic dacryocystitis.
- Patients willing to provide written informed consent.

Exclusion Criteria

- Patients with acute dacryocystitis.
- Congenital nasolacrimal duct obstruction.
- Previous lacrimal drainage surgery (DCR/DCT or any lacrimal procedure).
- Lacrimal sac tumors or traumatic lacrimal drainage injuries.
- Patients unwilling to participate in the study.

Clinical Evaluation

All enrolled patients underwent a detailed clinical assessment using a structured case record form. Demographic information, including age, sex, residence, occupation, affected eye, duration of symptoms, and relevant medical history, was recorded.

A comprehensive ophthalmic examination was performed, including assessment of visual acuity, slit-lamp biomicroscopy, examination of the lacrimal drainage apparatus, regurgitation on pressure over the lacrimal sac (ROPLAS) test, and lacrimal syringing to confirm nasolacrimal duct obstruction. Posterior segment examination was performed whenever indicated.

The diagnosis of chronic dacryocystitis was established based on characteristic clinical features, including persistent epiphora with or without mucopurulent discharge, positive ROPLAS findings, and confirmation of lacrimal drainage obstruction by syringing.

Assessment of Socioeconomic Status

Socioeconomic status was assessed using the Modified B.G. Prasad Socioeconomic Classification, and patients were categorized into Classes I to V according to the updated per capita monthly income criteria applicable

during the study period. Occupational status was also recorded to evaluate its association with the socioeconomic profile of the study population.

Table 1. Modified B.G. Prasad Socioeconomic Classification Used for Assessment of Socioeconomic Status

Socioeconomic Class	Original B.G. Prasad Classification (1961)	Modified B.G. Prasad Classification (2013) *
I	≥ Rs. 100	≥ Rs. 5156
II	Rs. 50–99	Rs. 2578–5155
III	Rs. 30–49	Rs. 1547–2577
IV	Rs. 15–29	Rs. 773–1546
V	< Rs. 15	< Rs. 773

Outcome Measures

The primary objective was to evaluate the clinicodemographic profile and socioeconomic status of patients with chronic dacryocystitis. Secondary outcomes included the distribution of patients according to age, sex, occupation, laterality of involvement, and Modified B.G. Prasad socioeconomic class.

Statistical Analysis

Data were entered into Microsoft Excel (Microsoft Corporation, Redmond, WA, USA) and analyzed using IBM SPSS Statistics for Windows, Version 26.0 (IBM Corp., Armonk, NY, USA). Continuous variables were expressed as mean ± standard deviation (SD), whereas categorical variables were presented as frequencies and percentages. Associations between categorical variables were analyzed using the Chi-square test or Fisher's exact

test, as appropriate. A two-tailed *p*-value of <0.05 was considered statistically significant.

RESULTS

A total of 200 patients with clinically diagnosed chronic dacryocystitis were included in the study. The mean age of the study participants was 57.4 ± 13.2 years (range: 21–80 years). The highest proportion of patients belonged to the 51–60 years age group (27.0%), followed by 61–70 years (25.0%). Patients aged 41–50 years constituted 18.0%, while those aged 31–40 years, 71–80 years, and 21–30 years accounted for 13.0%, 11.0%, and 6.0%, respectively. Females predominated in the study population, comprising 128 (64.0%) patients, while 72 (36.0%) were males, resulting in a female-to-male ratio of approximately 1.8:1. Regarding laterality, the right eye was affected in 108 (54.0%) patients, whereas the left eye was involved in 92 (46.0%) patients. [Table 1]

Table 1. Clinicodemographic Characteristics of the Study Population (n = 200)

Variable	Category	Number (n)	Percentage (%)
Age Group (years)	21–30	12	6.0
	31–40	26	13.0
	41–50	36	18.0
	51–60	54	27.0
	61–70	50	25.0
	71–80	22	11.0
Gender	Male	72	36.0
	Female	128	64.0
Eye Involved	Right	108	54.0
	Left	92	46.0

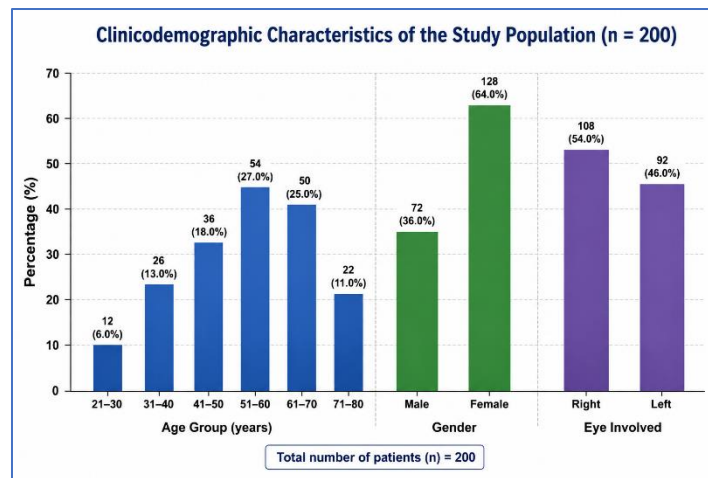


Figure 1: Clinicodemographic Characteristics of the Study Population (n = 200)

Homemakers constituted the largest occupational group (27.5%), followed by private employees (20.0%), business owners (15.0%), government employees (12.5%), daily wage workers (10.0%), students (7.5%), and unemployed individuals (7.5%). [Table 2]

Table 2. Distribution According to Occupation

Occupation	Number	Percentage (%)
Government employee	25	12.5
Private employee	40	20.0
Business	30	15.0
Homemaker	55	27.5
Student	15	7.5
Daily wage worker	20	10.0
Unemployed	15	7.5
Total	200	100.0

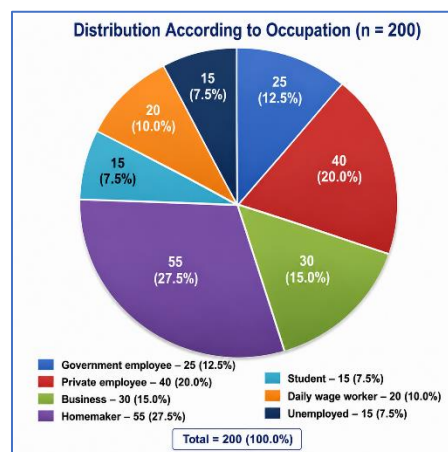
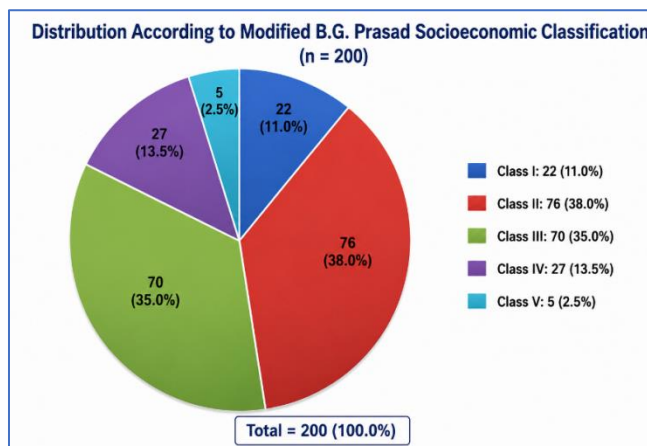


Figure 2: Distribution According to Occupation

Based on the Modified B.G. Prasad Socioeconomic Classification, the majority of patients belonged to Class II (38.0%), followed by Class III (35.0%). Class IV comprised 13.5%, while 11.0% belonged to Class I. Only 2.5% of patients were categorized as Class V. Overall, 73.0% of patients belonged to the middle socioeconomic strata (Classes II and III). [Table 3]

Table 3. Distribution According to Modified B.G. Prasad Socioeconomic Classification

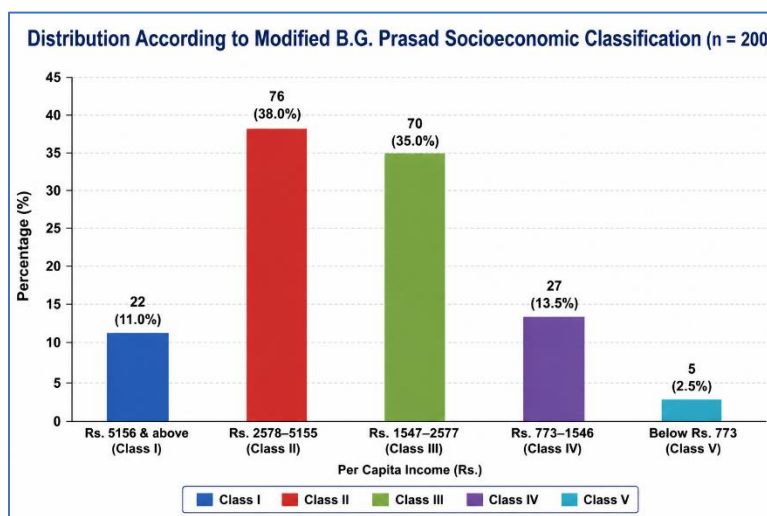
Socioeconomic Class	Number	Percentage (%)
Class I	22	11.0
Class II	76	38.0
Class III	70	35.0
Class IV	27	13.5
Class V	5	2.5
Total	200	100.0

**Figure 3: Distribution According to Modified B.G. Prasad Socioeconomic Classification**

The socioeconomic status of the study participants was assessed using the Modified B.G. Prasad Socioeconomic Classification. The majority of patients belonged to Class II (38.0%), followed by Class III (35.0%). Class IV accounted for 13.5%, Class I for 11.0%, and Class V for 2.5% of the study population. Overall, most patients belonged to the middle socioeconomic classes (Classes II and III). [Table 4]

Table 4. Distribution According to Modified B.G. Prasad Socioeconomic Classification (n = 200)

Per Capita Income	Socioeconomic Status	Frequency	Percentage (%)
Rs. 5156 & above	Class I	22	11.0
Rs. 2578–5155	Class II	76	38.0
Rs. 1547–2577	Class III	70	35.0
Rs. 773–1546	Class IV	27	13.5
Below Rs. 773	Class V	5	2.5
Total		200	100.0

**Figure 4: Distribution According to Modified B.G. Prasad Socioeconomic Classification (n = 200)**

A statistically significant association was observed between occupation and socioeconomic status ($\chi^2 = 68.54$, $df = 24$, $p < 0.001$). Government employees and business owners were predominantly represented in the higher socioeconomic classes (Classes I and II), whereas daily wage workers and unemployed participants were more frequently distributed in Classes III, IV, and V. [Table 5]

Table 5. Association Between Occupation and Modified B.G. Prasad Socioeconomic Classification

Occupation	Class I	Class II	Class III	Class IV	Class V	Total
Government employee	12	10	3	0	0	25
Private employee	8	20	10	2	0	40
Business	2	18	8	2	0	30
Homemaker	0	20	24	10	1	55
Student	0	5	7	2	1	15
Daily wage worker	0	2	12	5	1	20
Unemployed	0	1	6	6	2	15
Total	22	76	70	27	5	200

Chi-square = 68.54; $df = 24$; $p < 0.001$.

DISCUSSION

The present hospital-based cross-sectional study evaluated the clinicodemographic profile and socioeconomic status of 200 patients with chronic dacryocystitis attending a tertiary care center in Central India. Chronic dacryocystitis is one of the most common disorders of the lacrimal drainage system and continues to be an important cause of ocular morbidity, particularly among middle-aged and elderly individuals. The present study demonstrated a predominance of female patients and highlighted the influence of occupation and socioeconomic status on disease distribution.

In the present study, the majority of patients belonged to the 51–60 years (27.0%) age group, followed by the 61–70 years (25.0%) age group, with a mean age of 57.4 ± 13.2 years, indicating that chronic dacryocystitis predominantly affects older adults. Similar findings were reported by Wadgaonkar et al. [2], who observed the highest incidence in the 51–60 years age group, and by Acharlu et al. [1], who found that most patients were in the fifth and sixth decades of life. In contrast, Khatoon et al. [11] reported a younger study population with a mean age of 44.44 ± 18.95 years, with 50.94% of patients belonging to the third to sixth decades of life. Earlier studies by Jacobs et al. [12] reported the highest incidence between 40 and 55 years of age, while Sarda et al. [13] observed maximum incidence in the third and fourth decades. Dalglish et al. [14] suggested that acquired idiopathic nasolacrimal duct obstruction usually begins between 35 and 40 years of age, and Saxena RC et al. [15] also reported the highest incidence in the fourth decade. Similarly, Duke-Elder S. et al. [16] stated that chronic dacryocystitis predominantly affects adults over middle age and is relatively uncommon in children and adolescents, although he reported the peak incidence in the fourth decade. The comparatively higher mean age observed in the present study may be

attributed to differences in demographic characteristics, referral patterns, healthcare accessibility, and the urban tertiary care setting of the study population.

Female predominance was evident in the present study, with 64.0% of patients being women and a female-to-male ratio of approximately 1.8:1. This finding is consistent with previous studies by Khatoon et al. [11], who reported 73.58% female patients, as well Acharlu et al. [1] and Wadgaonkar et al. [2], all of whom observed a higher prevalence of chronic dacryocystitis among females. Earlier studies have also demonstrated similar findings. Jacobs HB et al. [12] reported a female-to-male ratio of 3:1, while Pawar and Patil [17] observed female predominance with a female-to-male ratio of 2.1:1 in their series of 150 patients. Dalglish R. [14] found that 54% of patients with chronic dacryocystitis were females, whereas Saxena RC et al. [15] reported an even higher female incidence of 84.6%. Similarly, Duke-Elder S. et al. [16] stated that although congenital dacryocystitis affects both sexes equally, acquired chronic dacryocystitis occurs predominantly in adults, with females accounting for 75–80% of cases compared with 25–30% in males. The greater susceptibility of females has been attributed to the relatively narrower bony nasolacrimal canal, increased vascular congestion of the nasal mucosa, hormonal influences, and age-related anatomical changes that predispose to nasolacrimal duct obstruction. These observations are consistent with the female predominance observed in the present study.

The right eye (54.0%) was slightly more commonly affected than the left eye (46.0%) in the present study. Similar unilateral predominance has been described in previous studies, although no consistent preference for either side has been established. Therefore, the slight right-sided predominance observed in our study is unlikely to have significant clinical implications.

With regard to occupation, homemakers (27.5%) represented the largest occupational group in the present study, followed by private employees (20.0%) and business owners (15.0%). A comparable finding was reported by Khatoon et al. [11], in which 59% of patients were housewives, indicating that women engaged in household activities constitute a major proportion of patients with chronic dacryocystitis. This predominance is likely related to the higher proportion of female participants in both studies and may also reflect prolonged exposure to domestic smoke, biomass fuel, dust, and other environmental irritants that contribute to chronic inflammation of the lacrimal drainage system. In contrast, Wadgaonkar et al. [2] reported that the majority of patients were wage laborers (35.71%), followed by farmers (32.14%), while 17.85% were unemployed and 7.14% were petty traders. The authors also observed that most patients belonged to lower and lower-middle socioeconomic groups in a predominantly rural population. The occupational distribution observed in the present study differs from that of Wadgaonkar et al. [2], which is likely attributable to differences in the study setting. Our study was conducted at an urban tertiary care center, where a larger proportion of patients were homemakers and salaried employees, whereas Wadgaonkar et al. studied a predominantly rural population engaged in manual labor and agriculture. These findings suggest that occupational patterns in chronic dacryocystitis vary according to the demographic and socioeconomic characteristics of the population studied.

Socioeconomic status is an important determinant of an individual's standard of living and has a significant influence on the incidence, prevalence, and healthcare-seeking behavior associated with various diseases. It also affects the accessibility, affordability, acceptability, and utilization of healthcare services. In the present study, socioeconomic status was assessed using the Modified B.G. Prasad Socioeconomic Classification, which is widely applicable to both rural and urban populations because it is based solely on per capita income and is simple to administer. The assessment revealed that 38.0% of patients belonged to Class II and 35.0% to Class III, indicating that nearly 73.0% of the study population belonged to the middle socioeconomic strata. In comparison, Khatoon et al. [11] reported that 43.40% of patients belonged to the lower-middle socioeconomic class, with 61.32% residing in rural areas. Similarly, Wadgaonkar et al. [2] observed a higher prevalence of chronic dacryocystitis among individuals from lower socioeconomic groups in a predominantly rural population. The comparatively higher proportion of middle socioeconomic class patients in the present study is likely attributable to the urban tertiary care setting, where individuals from middle-income households have

better access to specialized ophthalmic services. These findings suggest that while chronic dacryocystitis remains more common among lower socioeconomic groups in rural settings, patients presenting to urban tertiary care centers are more frequently drawn from the middle socioeconomic strata due to differences in healthcare accessibility and utilization.

A statistically significant association was observed between occupation and socioeconomic status ($\chi^2 = 68.54$; $p < 0.001$). Government employees and business owners were predominantly represented in the higher socioeconomic classes, whereas daily wage workers and unemployed individuals were more frequently distributed in the lower socioeconomic classes. This finding emphasizes the close relationship between occupation, socioeconomic status, and healthcare accessibility, which may influence both disease occurrence and the timing of presentation to tertiary care centers.

The findings of the present study have important clinical and public health implications. Identification of middle-aged and elderly women as the most commonly affected group may facilitate targeted screening and early referral for ophthalmic evaluation. Recognition of the influence of occupation and socioeconomic status on disease occurrence can assist in planning awareness programs and improving access to lacrimal drainage services, particularly among vulnerable populations. Early diagnosis and timely management are essential to prevent recurrent infection, lacrimal sac abscess, and other complications associated with chronic nasolacrimal duct obstruction.

Despite providing valuable insights into the clinicodemographic profile and socioeconomic status of patients with chronic dacryocystitis, this study has certain limitations. It was conducted at a single tertiary care center using a hospital-based cross-sectional design, which may limit the generalizability of the findings to the wider community. Furthermore, microbiological evaluation and long-term follow-up were not performed, precluding assessment of bacterial profile, treatment outcomes, recurrence, and long-term prognosis.

Strengths of the Study

This study provides valuable insights into the clinicodemographic profile and socioeconomic status of patients with chronic dacryocystitis in a tertiary care setting. The inclusion of a relatively large sample size (200 patients) enhances the reliability of the findings. A standardized clinical evaluation protocol and the Modified B.G. Prasad Socioeconomic Classification were used to ensure uniform assessment of all participants. Furthermore, the study evaluated the association between occupation and socioeconomic status, offering useful epidemiological evidence that

may assist clinicians and public health authorities in planning targeted awareness programs and improving access to ophthalmic care.

Future Recommendations

Future multicenter prospective studies involving larger sample sizes, microbiological evaluation, and long-term follow-up are recommended to validate these findings and improve the understanding of chronic dacryocystitis and its associated socioeconomic determinants.

CONCLUSION

Chronic dacryocystitis predominantly affected middle-aged and elderly individuals, with a clear female preponderance. The majority of patients belonged to the 51–70 years age group, and right eye involvement was slightly more frequent than left eye involvement. Most patients were homemakers or employed in the private sector and belonged to the middle socioeconomic classes according to the Modified B.G. Prasad classification. A significant association was observed between occupation and socioeconomic status. The findings emphasize the importance of early recognition, timely referral, and appropriate management of chronic dacryocystitis. Increased awareness and improved access to ophthalmic care may help reduce disease-related morbidity and improve patients' quality of life.

Data Availability Statement

The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

Funding

The authors received no external funding for this study.

Conflict of Interest

The authors declare no conflict of interest.

Informed Consent Statement

Written informed consent was obtained from all participants prior to enrollment in the study.

Author Contributions

Dr. Shreya Mahanaik contributed to the study conception, data collection, statistical analysis, manuscript preparation, and final approval. Dr. Rohini Gharde contributed to study design, supervision, interpretation of data, critical revision of the manuscript, and final approval. Dr. Perna Upadhyay contributed to study planning, overall supervision, manuscript review, and final approval. All authors read and approved the final manuscript.

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